Botanical Notes.

Comparative Anatomy of the Filz-like Hair-covering of Leaf-organs. Emily L. Gregory, Bryn Mawr College, Pa. (Inaugural dissertation for obtaining the degree of Doctor of Philosophy presented before the Philosophical Faculty of the University of Zürich, 1886, p. 42, illustrated.)

The thickening of the upper cells of hairs as compared with the basal cells and those of the epidermis beneath them, together with a certain form of stoma, noticed on leaves growing in a very moist atmosphere, suggested the probability of a connection between the hair-covering and the ability of leaves to take up moisture in a liquid state from the atmosphere. The investigations recorded in this paper seem to show that the leaf-hairs may contribute actively to the supply of water in the plant, as well as to prevent the escape of that taken up by the root-hairs. Recent investigations by others tend to substantiate this conclusion. Lists of plants are given which are grouped according to the anatomical and physiological characters of the hair-covering of their leaves. Of those in which the basal-cells of the hairs are living and best fitted to absorb water, the following native or naturalized plants are worthy of mention :—*Tussilago Farfara, Inula Helenium, Artemisia ludoviciana, Antennaria plantaginea, Potentilla anserina, Anaphalis margaritacea* and *Artemisia vulgaris.* Of those studied in which this function is doubtful the following are mentioned :—*Populus alba, Tilia alba and T. pubescens, Cynoglossum officinale, Dryas Drummondii* and *Ledum latifolium.*

Experimental tests were applied in order to determine the relative power of absorption of the basal cells of hairs as compared with the epidermal cells; wilted leaves were lightly brushed with water so as to moisten the hairy coating, but not the epidermis, and the recovery of turgescence timed. The plasmolytic condition of the basal cells of hairs was found to be greater than that of the epidermal cells. The most decisive results were obtained with plants of arid regions, *Helicrysum petiolatum* from the Cape of Good Hope and *Salvia argentea* from Southern Europe. In the case of *Alfredia cernua* an interesting peculiarity was noted; it was found that the hairs on the veins

on the under side of the leaf absorbed water more rapidly than those on the spaces between.

The essay concludes with a critical comparison of the stomata of plants that are hairy, and emphasis is laid on the following deduction: "Whenever the hairs or scales form a covering so that a protected layer of air exists between the covering and the epidermis, the stomata are raised, and where the outside air has free communication with the stomata, they are not raised."

Flora Braziliensis. Fascicle xcvii of this stupendous work was issued on April 1st. It contains monographs of the Brazilian Ternstrœmiaceæ by H. Wawra Eques de Fernsee, with 17 plates, the Rhizoboleæ by L. Wittmack with 5 plates, and the Dichapetaleæ by H. Baillon with 4 plates.

Cooke's Illustrations of British Fungi. Parts Nos. 42 and 43 of this fine work, commencing Vol. v., have recently been issued. The genus *Agaricus* is still the subject of illustration, the number of plates having nearly reached 700; the descriptive text is published in "Grevillea"; the number of species of British Agarics described has now reached 577, as shown by the part issued in the September number of that journal.

Baillon's Dictionnaire de Botanique. The 19th and 20th parts of this work, completing Volume ii., have recently been issued, the last genus noted being *Gytonanthus.* A beautifully colored plate accompanies each part; these, however, are not numbered and will be somewhat troublesome to cite.

Photographs of the Fruits of American Plants. Dr. C. F. Millspaugh, of Binghamton, N. Y., has sent us some photographs of the fruits of *Actæa spicata,* var. *alba,* and *Celastrus scandens,* which are intended to be attached to Herbarium sheets. These are especially desirable in species—like those of *Actæa*—whose fruit is difficult to preserve. We hope that Dr. Millspaugh will find it possible to produce photographs of other species and give botanists opportunity to obtain them.

Cypripedium arietinum in China. In a recent number of the Bulletin of the Botanical Society of France, M. Franchet notes the discovery of this plant in the mountains of Yun-nan, Southwestern China. This interesting fact adds another link to the chain of evidence of the common origin of the Eastern North American and Eastern Asiatic Floras.